

Remarks

Claims 1-8, 10-16, and 24-33 are pending in this application. By the foregoing amendment, Applicants seek to cancel claims 9, and 17-23, and amend claims 1, 8, 24, and 30. These changes are believed to be fully supported by the specification and are not believed to introduce new matter. Thus, it is respectfully requested that the amendments be entered by the Examiner. The Examiner is invited to telephone the undersigned representative if it is believe that an interview might be useful for any reason.

Respectfully submitted,

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Version with markings to show changes made

In the Claims:

1. (Once Amended) A method of frequency translating and phase shifting an electromagnetic (EM) signal, the method comprising the steps of:

- (1) receiving an EM input signal;
- (2) generating a control signal having a plurality of pulses that are phase-shifted relative to a reference phase; and
- (3) sampling the EM signal according to said control signal, resulting in a frequency translated EM signal that is phase shifted according to said phase shift of said pulses of said control signal[;]

[wherein said plurality of pulses have pulse widths sufficient to transfer non-negligible amounts of energy from the EM signal to the frequency translated signal].

8. (Once Amended) A method of down-converting and phase shifting an EM signal, the method comprising the steps of:

- (1) receiving an EM input signal;
- (2) generating a control signal having a plurality of pulses that are phase-shifted relative to a reference phase;
- (3) sampling the EM signal according to said control signal, resulting in undersamples that are phase shifted according to said phase shift of said pulses of said control signal; and
- (4) integrating successive undersamples, resulting in a down-converted output signal that is phase shifted according to said pulses of said control signal[;]

[wherein said plurality of pulses have pulse widths sufficient to transfer non-negligible amounts of energy from the EM input signal to said down-converted signal].

24. (Once Amended) A method of up-converting and phase shifting a baseband signal, the method comprising the steps of:

- (1) receiving an EM input signal;
- (2) generating a control signal having a plurality of pulses that are phase-shifted relative to a reference phase; and

(3) sampling the EM signal according to said control signal, resulting in a plurality of harmonic images that are each representative of the baseband signal, and are phase shifted according to said phase shift of said pulses in said control signal;

wherein said control signal has pulse widths [that sufficient to improve energy transfer to a desired harmonic image of said plurality of harmonic images].

30. (Once Amended) A system for frequency translating an EM signal to generate a frequency translated output signal that is phase shifted relative to a reference phase, comprising:

a pulse generator that is controlled by an LO signal, wherein said pulse generator triggers and generates a pulse when said LO signal exceeds a threshold;

a switch module controlled by pulses from said pulse generator, wherein said switch module samples said EM signal according to said pulses, resulting in said frequency translated output signal; and

means for varying a time that said LO signal exceeds said threshold of said pulse generator, and thereby phase shifting said frequency translated output signal;

wherein said pulses have pulse widths [that are sufficient to transfer non-negligible amounts of energy from said EM signal to said frequency translated output signal].

Claims 9 and 17-23 have been canceled.